

WHAT IS CLAIMED IS:

1. A method for conditioning air for an enclosure comprising the steps of cooling a supply air stream with a refrigerant system containing a variable compressor by passing the air over a cooling coil to reduce the temperature thereof, passing the thus cooled supply air stream through a segment of a rotating desiccant wheel under conditions which increase its temperature and reduce its moisture content, and then delivering the thus treated air to said enclosure; regenerating the desiccant wheel by heating a regeneration air stream with the condensing coil of the refrigerant system, and then passing the heated regeneration air stream through another segment of the rotating desiccant wheel to regenerate the desiccant in the wheel; sensing at least one condition of the supply air stream, the regeneration air stream, and/or the refrigerant system; and controlling the output of the compressor in response to the sensed condition.
2. The method as defined in Claim 1 including the steps of supplying make-up air to said supply air, sensing at least one condition of the air in the enclosure and controlling the supply of make-up air in response to such sensed condition.
3. The method as defined in Claim 1 including the step of sensing the regeneration air temperature entering the regeneration segment of the desiccant wheel and controlling the volume of regeneration air passing the condenser coil and entering the regeneration segment of the condenser coil to control the air temperature entering that segment to a predetermined value.
4. The method as defined in Claim 2 including the step of sensing the regeneration air temperature entering the regeneration segment of the desiccant wheel and controlling the volume of regeneration air passing the

condenser coil and entering the regeneration segment of the condenser coil to control the air temperature entering that segment to a predetermined value.

5. The method as defined in Claim 1 including the step of sensing the condensing coil pressure and maintaining it at a predetermined pressure condition, and controlling the volume of regeneration air passing the condenser coil and entering the regeneration segment of the condenser coil thereby to maintain a relatively uniform regeneration air temperature.
6. The method as defined in Claim 2 including the step of sensing the condensing coil pressure and maintaining it at a predetermined pressure condition, and controlling the volume of regeneration air passing the condenser coil and entering the regeneration segment of the condenser coil thereby to maintain a relatively uniform regeneration air temperature.
7. The method as defined in Claim 1 including the step of sensing the temperature of the cooled supply air leaving the desiccant wheel and controlling compressor capacity in response to that sensed temperature to maintain the cool air temperature leaving the wheel at a predetermined value.
8. The method as defined in Claim 5 including the step of sensing the temperature of the cooled supply air leaving the desiccant wheel and controlling compressor capacity in response to that sensed temperature to maintain the cool air temperature leaving the wheel at a predetermined value.
9. The method as defined in Claim 6 including the step of sensing the temperature of the cooled supply air leaving the desiccant wheel and controlling compressor capacity in response to that sensed temperature to

maintain the cool air temperature leaving the wheel at a predetermined value.

10. A method for condition air for supply to an enclosure comprising the steps of cooling a supply air stream having a temperature range of between 65°F-95° and above and a moisture content of between 90-180 gr/lb. with a refrigerant system cooling coil to reduce the moisture content and temperature thereof to a first predetermined moisture content saturation level and saturation temperature range, passing the thus cooled and dried ambient supply air stream through a segment of a rotating desiccant wheel under conditions which increase its temperature to a second predetermined temperature range of about 68-81°F and reduce its moisture content further to a predetermined humidity level of between 30-80 gr/lb.; and then delivering the thus treated air to said enclosure; regenerating the desiccant wheel by heating a regeneration air stream with the condensing coil of the refrigerant system to increase its temperature to a predetermined temperature range of 105°F-135°F and then passing the heated regeneration air stream through another segment of the rotating desiccant wheel to regenerate the desiccant in the wheel; sensing at least one condition of the supply air stream, the regeneration air stream and/or the refrigeration system; and controlling the output of the compressor in response to the sensed condition.
11. The method as defined in Claim 10 including the steps of supplying make-up air to said supply air, sensing at least one condition of the air in the enclosure and controlling the supply of make-up air in response to such sensed condition.
12. The method as defined in Claim 11 including the step of sensing the regeneration air temperature entering the regeneration segment of the desiccant wheel and controlling the volume of regeneration air passing the condenser coil and entering the regeneration segment of the condenser coil

to control the air temperature entering that segment to a predetermined value.

13. The method as defined in Claim 12 including the step of sensing the temperature of the cooled supply air leaving the desiccant wheel and controlling compressor capacity in response to that sensed temperature to maintain the cool air temperature leaving the wheel at a predetermined value.
14. The method as defined in Claim 12 including the step of sensing the condensing coil pressure and maintaining it at a predetermined pressure condition, and controlling the volume of regeneration air passing the condenser coil and entering the regeneration segment of the condenser coil thereby to maintain a relatively uniform regeneration air temperature.
15. The method as defined in Claim 14 including the step of sensing the temperature of the cooled supply air leaving the desiccant wheel and controlling compressor capacity in response to that sensed temperature to maintain the cool air temperature leaving the wheel at a predetermined value.